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PATENT APPLICATION  
Mo-6843  
LeA 33,555

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

IN APPLICATION OF )  
JORG HOFFMANN ET AL ) GROUP NO: 1711  
SERIAL NO.: 10/018,332 ) EXAMINER: J. M. COONEY  
FILED: DECEMBER 13, 2001 ) RESPONSE TO PAPER NO. 1003  
TITLE: HIGH-RESILIENT )  
POLYURETHANE FOAMS )  
PRODUCED FROM )  
POLYETHER POLYOLS )

**LETTER**

Commissioner for Patents  
Alexandria, VA 22313-1450

Sir:

Enclosed herewith are three copies of an Appeal Brief in the matter of the subject Appeal. Please charge the fee for filing the Brief, \$330.00, to our Deposit Account Number 13-3848.

Respectfully submitted,

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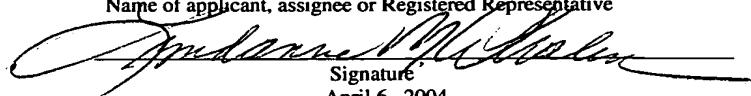
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04/06/04

Date

Lyndanne M. Whalen, Reg. No. 29,457

Name of applicant, assignee or Registered Representative

  
Signature  
April 6, 2004

Date

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) RESPONSE TO PAPER NO. 1003

**APPEAL BRIEF**

Commissioner for Patents

Alexandria, VA 22313-1450

Sir:

This Brief, submitted in triplicate, is an Appeal from the Final Action of the Examiner dated November 7, 2003, in which the rejections of Claims 11 and 13-15 were maintained.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Alexandria, VA 22313-1450, on  
04/06/04

Date

Lyndanne M. Whalen, Reg. No. 29,457

Name of applicant, assignee or Registered Representative

Signature

April 6, 2004

Date

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I. REAL PARTY IN INTEREST

Each of the inventors has assigned his interest in this application to Bayer Aktiengesellschaft, a German corporation. The real party in interest in this Appeal is therefore Bayer Aktiengesellschaft.

II. RELATED APPEALS AND INTERFERENCES

There are no pending appeals or interferences of which Appellants are aware that would be affected by or have a bearing on the Board's decision in this Appeal.

III. STATUS OF CLAIMS

Claims 11 and 13-15 remain pending and are the subject of this Appeal.

Claims 1-10 were cancelled in Appellants' Preliminary Amendment filed with the above-identified application.

Claims 12 and 16-18 were cancelled in Appellants' Amendment filed June 30, 2003.

IV. STATUS OF AMENDMENTS

No amendment to any of the pending claims was made or requested subsequent to the Examiner's Final Action.

V. SUMMARY OF THE INVENTION

The present invention relates to flexible polyurethane foams which are the reaction product of a polyisocyanate and a polyether polyol. The polyether polyol which is produced by alkoxylation in the presence of a double metal cyanide catalyst has (a) a terminal propylene oxide block; (b) at least one ethylene oxide/propylene oxide mixed block; and (c) a number average molecular weight of from 700 to 50,000 g/mole.

VI. ISSUES

- A. Claims 11 and 13-15 stand rejected under 35 U.S.C. §102(e) as being anticipated by Thompson et al (U.S. Patent 6,008,263).
- B. Claims 11 and 13-15 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Beisner et al (U.S. 6,066,683).
- C. Claims 11 and 13-15 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Hager (U.S. Patent 5,648,559).
- D. Claims 11 and 13-15 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Kinkelaar et al (U.S. Patent 5,668,191).

The rejection of Claims 11 and 13-15 under 35 U.S.C. § 102(e) on the basis of Lear et al (U.S. Patent 5,958,994) was withdrawn in the Examiner's Advisory Action dated March 3, 2004.

VII. GROUPING OF CLAIMS

- A. None of Claims 11 and 13-15 will be argued separately in response to ISSUE A. Claims 11 and 13-15 therefore stand or fall together with respect to ISSUE A.
- B. None of Claims 11 and 13-15 will be argued separately in response to ISSUE B. Claims 11 and 13-15 therefore stand or fall together with respect to ISSUE B.
- C. None of Claims 11 and 13-15 will be argued separately in response to ISSUE C. Claims 11 and 13-15 therefore stand or fall together with respect to ISSUE C.
- D. None of Claims 11 and 13-15 will be argued separately in response to ISSUE D. Claims 11 and 13-15 therefore stand or fall together with respect to ISSUE D.

## VIII. ARGUMENTS

### A. Thompson et al does not anticipate Appellants' claimed invention.

Appellants' invention requires a polyol having "a terminal propylene oxide block".

Thompson et al discloses the use of polyols in which mixtures of ethylene oxide and propylene oxide are used in both stages of production of the polyol. The polyol component required by Thompson et al must have at least 1.5 weight percent ethylene oxide in the external blocks.

Thompson et al's polyols used to produce foams can **not** therefore have the "terminal propylene oxide block" required in Appellants' claimed invention.

Thompson et al does not therefore disclose the claimed invention in the manner necessary to support a rejection under 35 U.S.C. § 102(e).

The Examiner has argued that:

Thompson et al.'s disclosure is encompassing of the distributions and amounts of the various blocks in the polyols used as described by applicants' claims, and no distinction is seen to exist between the reference's disclosed flexible foams and the foams defined by applicants' claimed foaming techniques as they are both directed towards flexible foams and it is the composition which defines the product being claimed in the instant case. At page 3, lines 4-9 of the Office Action dated November 7, 2003

Appellants respectfully disagree.

A polyol with a terminal block composed of propylene oxide is clearly not the same as a polyol in which the terminal block is composed of both propylene oxide and ethylene oxide as required by Thompson et al.

The Thompson et al reference itself teaches:

It has been surprisingly discovered that the effects of both excessive stabilization as well as foam collapse may be altered by changing proportions of ethylene oxide or stabilization-modifying monomer contained in the interior and **exterior** blocks of the subject polyol. (at column 5, lines 43-47) (emphasis added)

Consequently, one skilled in the art reading the Thompson et al disclosure would readily appreciate that (1) Thompson et al considered the presence of ethylene oxide in the terminal block to be a critical feature of the disclosed reference

and (2) the composition of the terminal block of the polyol significantly affects the physical properties of the foam produced with that polyol.

The Examiner's argument is not therefore supported by the teachings of the Thompson et al reference and does not therefore provide proper support for the rejection of Appellants' claims.

Further, Thompson et al does not teach the use of any polyol having a terminal propylene oxide block in which no ethylene oxide is present in the course of the DMC-catalyzed process to produce foams in accordance with the process disclosed therein. In fact, Thompson et al teaches that ethylene oxide should be present at least 95%, most preferably at least 99% of the time that the alkoxylation reaction is being conducted. (See discussion at column 5, line 60 through column 6, line 11 of Thompson et al.)

Appellants' invention which requires a terminal propylene oxide block in which no ethylene oxide is present is not therefore disclosed by Thompson et al in the manner necessary to support a proper rejection under 35 U.S.C. § 102.

The Examiner has argued that Appellants' claims do not define their "type" of terminal propylene oxide block. (Advisory Action Continuation Sheet)

Appellants respectfully disagree.

As used in Appellants' claims, "terminal propylene oxide block" has its plain meaning, i.e., a terminal block derived from propylene oxide. It does not include ethylene oxide because inclusion of ethylene oxide would result in a mixed block terminal group.

The Examiner's argument does not therefore support this rejection of Appellants' claims.

B. Beisner et al does not anticipate Appellants' claimed invention.

Beisner et al discloses foams made with a polyol having a random ethylene oxide content of at least about 1.5 weight percent. Beisner et al does not require a polyol having the terminal propylene oxide block required in Appellants' invention. In fact, Beisner et al teaches that the disclosed polyols are "spread EO polyols" because EO moieties are "spread" or "randomly distributed throughout the portion of the polyol prepared by DMC-catalyzed oxyalkylation". (at column 5, lines 55-60)

Such propoxylation would not, however, result in a polyol which could consistently be expected to have the terminal propylene oxide blocks required in Appellants' claimed invention.

That Beisner et al's polyol does not predictably have the terminal propylene oxide block of Appellants' invention is evident from Beisner et al's discussion of capping the polyol with **propylene oxide** or ethylene oxide at column 7, lines 47-65.

Appellants' claimed invention may be further distinguished from the teachings of Beisner et al in that Appellants' polyether polyol having the terminal propylene oxide block **must** be produced in the presence of a double metal cyanide catalyst. In contrast, Beisner et al teaches:

When more than a 5 weight percent DMC-catalyzed polyoxypropylene cap is employed, the polyols are **unsuitable** in molded and slab form [sic] formulations, causing **foam** collapse. (column 7, lines 8-11) (emphasis added)

Contrary to this teaching, Appellants' claimed invention produces foam which does not collapse from polyols having terminal propylene oxide blocks which polyols are produced in the presence of a DMC catalyst.

An invention which is contrary to the teachings of the prior art is clearly not disclosed by that prior art.

Beisner et al does not therefore disclose Appellants' claimed process for the production of foam in the manner necessary to support a proper rejection under 35 U.S.C. § 102(e).

#### C. Hager does not anticipate Appellants' claimed invention

Hager discloses high resilience polyurethane foams produced with a polyol component that must include a polyol having one or more random poly(oxypropylene/oxyethylene) external blocks. Hager does not, however, disclose a polyether polyol produced with a DMC catalyst having the terminal propylene oxide blocks as required in Appellants' claimed invention.

In fact, Hager specifically teaches:

However, substantial DMC-catalyzed, all polyoxypropylene blocks  
**must be avoided** to eliminate foam shrinkage. (at column 8, lines 2-4)  
(emphasis added)

One skilled in the art reading the above-quoted teaching of Hager would clearly **not** consider this to be teaching that a polyol produced with a DMC catalyst having a terminal propylene oxide block will produce a foam having good physical properties.

Appellants' process for producing foams which **requires** a polyol produced with a DMC catalyst having a terminal propylene oxide block is not therefore disclosed by Hager in the manner necessary to support a proper rejection under 35 U.S.C. § 102.

D. Kinkelaar et al does not anticipate Appellants' claimed invention.

Kinkelaar et al teaches cold-molded, flexible-polyurethane foams produced from a polyol prepared by oxyalkylating a "suitably hydric" initiator molecule with propylene oxide alone, a mixture of propylene oxide and a higher alkylene oxide, or a mixture of any of these oxides with ethylene oxide. The composition of the alkylene oxide feed may be changed during the oxyalkylation to produce a variety of random and block/random configurations. The only example of a suitable procedure for making such a polyol given in the reference had as the first step oxyalkylation conducted with only propylene oxide and as the second step, oxyalkylation with both propylene oxide and ethylene oxide. "The resulting polyol would, in such case, contain an internal polyoxypropylene block and an **external random polyoxypropylene/polyoxyethylene block.**" (At column 4, lines 25-27)(emphasis added)

External random PO/EO blocks clearly are **not** same or equivalent to Appellants' required polyol having a terminal propylene oxide (PO) block for the same reasons that have been discussed above.

Kinkelaar et al does not therefore disclose Appellants' claimed invention in the manner necessary to support a proper rejection under 35 U.S.C. § 102(b).

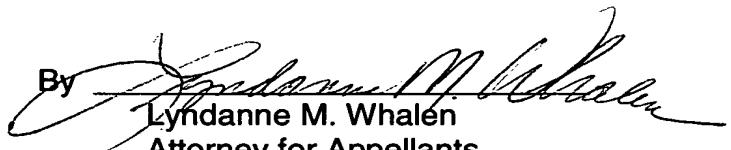
## IX. CONCLUSION

Not one of the Thompson et al, Beisner et al, Hager and Kinkelaar et al references teaches a process for the production of a foam from a polyether polyol produced by DMC catalysis having a terminal propylene oxide block.

Appellants' invention which requires such a polyether polyol is not therefore anticipated by the teachings of Thompson et al, Beisner et al, Hager or Kinkelaar.

Appellants therefore maintain that each of the Examiner's rejections is in error and respectfully request that each of these rejections be reversed and that Claims 11 and 13-15 be allowed.

Respectfully submitted,

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CLAIMS ON APPEAL

11. A flexible polyurethane foam which is the reaction product of
  - (1) a polyisocyanate with
  - (2) an isocyanate-reactive component comprising a polyether polyol produced by alkoxylation in the presence of a double metal cyanide catalyst having a terminal propylene oxide block, containing at least one ethylene oxide/propylene oxide mixed block and having a number average molecular weight of from 700 to 50,000 g/mole.
13. The foam of Claim 11 which is a hot cured molded foam.
14. The foam of Claim 11 which is a slabstock foam.
15. The foam of Claim 14 in which at least 50 mole% of the ethylene oxide/propylene oxide mixed block of the polyether polyol comprises polyoxypropylene units.